

~~CONFIDENTIAL~~

0C-15

Chief, Contract Administration Branch

26 April 1960

Chief, Termination & Settlement Branch

Contract No. RD-128, Task Order No. 6
with

25X1

1. Attached for appropriate attention are three executed copies of Contractor's Release and Assignment on this case in the amount of \$27,512.15, which is the approved settlement amount.

2. This case is now considered closed by Termination and Settlement Branch.



25X1

Distribution:

Orig - Addressee

1 - RD-128, TO#6 (Official)

1 - ICAD

1 - OC-E

1 - T&SB

OL/PD/T&SB

25X1

DOC	8	REV DATE	19 MAR 1960	BY	064540
ORIG COMP	035	OPI	56	TYPE	02
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JUST	22	NEXT REV	2010	AUTH:	HR 404

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8-49.8-211

5 MAR 1958

Chief, Supplemental Programs Division, OC

Chief, Engineering Division, OC

High Gain Broadband Antenna

REF: SPM 8-544, SPM 7-708, SPM 8-515

1. In regard to the subject references, [] has recently supplied a compromise proposal covering an antenna and pedestal assembly. This information was supplied to SPD representatives on 23 January 1958 through verbal discussions in order to expedite the consideration and handling of this project.

25X1

2. The proposal has been examined by this Division and is considered acceptable, especially in light of the fact that two other contractors have declined to attempt to produce the desired antenna in the 90 day period required. It is recommended therefore that the [] proposal be accepted.

25X1

3. Your concurrence in the attached proposal is requested as soon as possible. Upon receipt of this concurrence every effort will be made to expedite the project.

[]

25X1

Attachments:

[] Proposal and Cost Analysis Sheet dated 28 February 1958

25X1

25X1

CONCUR:

For

Acting Chief, OC-SP

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Chief, Supplemental Programs Division, OC

Chief, Engineering Division, OC

High Gain Broadband Antenna

REF: SPM 8-544, SPM 7-708, SPM 8-515

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[]

25X1

Attachments:

[] Proposal and Cost Analysis Sheet dated 28 February 1958

25X1

CC: R+D-EP/LHG:mjr (4 March 1958)

cc: R+D Subject File

OC-E Chrono

R+D []

EP Acting Chief, OC-SP

25X1

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USE ONLY☐ CONFIDENTIAL☒ SECRET

ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM:

OC-SP/EA

M

NO.

SPM 7-708

DATE

20 December 1957

TO: (Officer designation, room number, and building)

DATE

RECEIVED

FORWARDED

OFFICER'S
INITIALS

COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)

1.

OC-SP

23 Dec 57

18 Dec 57

[Signature]

1. For signature

2.

3.

OC-E

4.

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8.

9.

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12.

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15.

OB

A [Signature]

ACTION
LFC SFORM
DEC 56

610

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EDITIONS☒

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Office Memorandum • UNITED STATES GOVERNMENT

TO : Chief, Engineering Division, OC

SPM 7-708
DATE: 20 December 1957

FROM : Chief, Supplemental Programs Division, OC

SUBJECT: High Gain-Broadband Antenna Requirement

1. The [] has a requirement for a broadband-high gain antenna to be rotator mounted. High gain and broadband characteristics are not usually obtainable in one antenna, however, with some compromises we feel the following system can be produced to meet our requirements.

25X1

2. The following design parameters are established for your determination of a constructor:

A. 150 mcs to 1000 mcs with one feed.

B. Truncated paraboloid reflector not to exceed eight feet high by twenty feet wide.

C. A usable feed would probably be a logarithmic spiral. If a matching network is required for the fifty ohm receiver input, the network should be incorporated in the rotator control/indicator console.

D. Ease of detaching the antenna from the rotator should be a prime factor in building the mount. The antenna will be mounted only during the operating periods and removed when not in use.

E. The wind and temperature limits for this antenna should be patterned after the U. S. Navy shipboard standards.

3. We prefer to obtain a standard military type reflector and rotator with a contract being arranged for the assembly of the feed system and the rotator control and indicator console. Gain patterns are required as a means of determining the accuracy of the antenna beam throughout the desired band. The following list is the preferred patterns at the half power points.

150 mcs	11 DB	50 degrees
300	17	23
500	21	14
600	22	11
750	25	9
1000	27	7

..... Our requirement for.....

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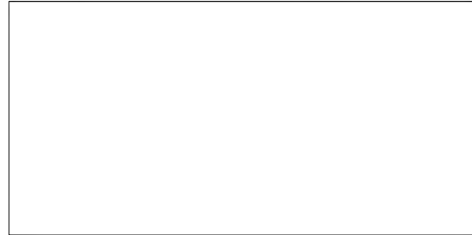
Page 2
SPM 7-708

Our requirement for this antenna necessitates a minimum of side lobes, but should this be impossible, the knowledge of their limited existence will be sufficient.

4. The assembly of this unique antenna should provide valuable information for future broadband antenna requirements.

25X1

Distribution:
Orig & 1 - Addressee



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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM:

OC-SP/EA

NO.

SPM 8-544

DATE

7 February 1958

TO: (Officer designation, room number, and building)

DATE

OFFICER'S INITIALS

COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)

RECEIVED

FORWARDED

1.

OC-SP

7/2 *[Signature]*

1. For signature

2.

OC-E

3.

R&D

2/7 *[Signature]*

4.

EP

ACTION - ZIP

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FORM 1 DEC 56

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Scanning antenna? No
Rotatable? Continuous
Rate of rotation? 2 rpm
Accuracy of positioning? $\pm 1^\circ$
Automatic or manual control of position? Manual(?)
Automatic track No
Type signal? Receiving only
Range indicators? yes
Elevation? No
Change feeds? No (if VSWR can be maintained.)
Loading conditions, Ice? Snow? yes
Shock + vibration? Normal ship vibrations.
Preferred reflector type? Expanded screen
Loading limits for operation? NAI spec
Polaroid mandatory? yes
VSWR limits? 3:1 QUALIFIED
E plane beam limits? MINIMUM.

Front to Back ratio? Best possible
How detailed pattern analysis? Only where side lobes significant
Pattern analysis on site? No (?)
Power available for drive system? 115V. AC 60W.
Length of antenna from Rx? 35 feet
Type of receiver?
Can Rx be GFE for antenna test? ~~Yes~~
Filters between Ant & Rx? NO.

Weight. 500 to 1000 lbs.
Antenna and Rotator.

Reflector should be as light as possible with fittings for rapid detachment.

Cube, Weight, and delivery date for establishing sea shipment space.

When needed? Limit? 15 March 1958

25X1

Change feeds? No, it's SWR can be maintained
VSWR? 3-1 nominal

E plane beam

Side lobe limits? 6 db below main lobe

Front to back ratio Best possible

How detailed pattern analysis? Only where side lobes significant

Power for drive 115 VAC 60W

Ant to Rx 35'

Type of Rx

GFE

yes

Fitter

Weight

500-1000 lbs antenna,
rotator, pedestal complete
reflector as light as
possible with fittings
for rapid detachment

Cur weight & delivery date needed for
shipping space. Sea shipment

25X1

Scanning antenna? No
Rotatable? Continuous
Rate of rotation? 2 rpm
Accuracy of positioning? $\pm 1^\circ$
Automatic or manual control of position? Manual(?)
Automatic track No
Type signal? Receiving only
Range indicators? yes
Elevation? No
Change feeds? No
Loading conditions, Ice? Snow? yes
Shock & vibration? —
Preferred reflector type? Expanded screen
Loading limits for operation? MIL spec
Paraboloid mandatory? yes
VSWR limits? —
E plane beam limits? —

Acceptable limits of size rules? _____

Front to Back ratio? _____

How detailed pattern analysis? _____

Pattern analysis on site? No (?)

Power available for drive system? _____

Length of antenna from Rx? _____

Type of receiver? Xtal video

Can Rx be GFE for antenna test? No

Filters between Ant & Rx? _____

Polynomialization

When needed? Limit? _____

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ROUTING AND RECORD SHEET

SUBJECT: (Optional)

FROM:

OC-SP/EA

NO.

SPM 8-515

DATE

17 January 1958

TO: (Officer designation, room number, and building)

DATE

RECEIVED

FORWARDED

OFFICER'S
INITIALS

COMMENTS (Number each comment to show from whom to whom. Draw a line across column after each comment.)

1. OC-SP

2. OC-E

3. RYD/EP

4. FCS

5. L H G

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ACTION PLS

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Office Memorandum • UNITED STATES GOVERNMENT

TO : Chief, Engineering Division, OC

SPM 8-515

DATE: 17 January 1958

FROM : Chief, Supplemental Programs Division, OC

SUBJECT: High Gain Broadband Antenna Details

REFERENCE: SPM 7-708

1. Discussions with [redacted] of OC-E/R&D-EP have firmed the following parameters for obtaining an antenna and modifying the feed system to meet the referenced memorandum requirements. We wish to establish the urgency of this particular item as we have a critical delivery date requirement. [redacted]

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25X1
25X1

2. The following factors are the ideal design conditions to assist you in procuring this antenna.

a. Continuously rotatable at the rate of 2 rpm with positioning accuracies within $\pm 1^\circ$ (plus one degree).

b. Positioning should be manual activate with power drive.

c. The antenna will be receiving only over the range of 150 mcs to 1000 mcs.

d. Remote rotate controls with an azimuth indicator should be provided for the receiver operator's control.

e. One feed is preferred but should the VSWR greatly exceed the desired 3:1 ratio, multiple feeds should be provided. Feed changes, if necessary, should be a simple operation.

f. Loading conditions should meet MIL specs. applicable to temperature, wind, snow, and ice.

g. Vibration and shock conditions must be considered for a vessel of 100 feet steel fishing-hull construction.

h. The reflector construction is recommended as expanded steel or lighter weight metals if possible. Weight and wind loading would be prime factors for reflector procurement.

i. A paraboloid reflector seems most desirable to achieve wide band gains with fixed focal length for feed element settings.

j. A/minimum

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17 January 1958

-2-

SPM 8-515

j. A minimum vertical beam angle of 15° is necessary.

k. The side lobe levels should be at least 6 db below the main center lobe. In considering the front to back ratio, the limits are not defined but should be reasonably good.

l. Beam gain patterns are requested with special attention for that region where the side lobes are significant.

m. Pattern studies at the site will not be considered at this time.

n. Power for the rotator will be 115 volts 60 cycles.

o. 50 ohm coaxial feed lines of 35 feet length will operate into a receiver. This receiver can be GFE to the contractor for antenna testing and pattern analysis.

25X1

p. The maximum total weight of both antenna and rotator can be 1000 pounds. This limit will undoubtedly mandate serious consideration for light weight components in the reflector and feed in order to minimize the rotator requirements. The additional requirement for rapid reflector detachment will further emphasize the minimum weight consideration.

q. The cube, weight, and delivery date must be made available as soon as possible for establishing space under sea shipment. Details of the mounting requirements would also be helpful for preparing the footings prior to arrival of the antenna.

3. The operations unit just recently advised us of the urgency for this antenna; consequently, the referenced memorandum did not establish this fact. Rapid action must be taken on this antenna procurement and modification because of the early delivery date and the high priority this Division has given to the project.

25X1

for

Distribution:
Original & 1 - Addressee

SECRET

STANDARD FORM NO. 64

~~SECRET~~**Office Memorandum • UNITED STATES GOVERNMENT**

TO : Chief, Engineering Division, OC

SPM 8-544
DATE: 7 February 1958

FROM : Chief, Supplemental Programs Division, OC

SUBJECT: High Gain Broadband Antenna

REF : SPM 8-515

1. The antenna requirement, outlined in the referenced memorandum, has been discussed with [] OC-E/R&D-EP, who provided details established by verbal discussions with [] It is our understanding, as participants in the various contractor meetings, that [] could not produce this antenna in the desired time. We, therefore, accept the proposal from [] and request that all efforts possible be devoted to establishing a contract for delivering this antenna within ninety days.

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25X1

2. The following design factors are the significant details for this antenna construction:

✓A. Eight foot diameter paraboloid of circular revolution.

*Dipoles 150-300, 300-600
600-1200*

✓B. Three feeds terminating in 50 ohm coax for operation as a receiving antenna from 150 mcs to 1000 mcs.

*Rot. to feed manually
for polarization*

✓C. The V.S.W.R. should not exceed 3:1. (2-1)

✓D. The maximum gain possible is requested with the side lobes at least 10 db below the main lobe.

✓E. The best possible front to back ratio. (It was reported to us that [] quoted 20 db front to back ratio with a possible decrease in this figure at the 150 mcs. region.)

25X1

✓F. The main lobe should meet the following gain/beam width conditions:

150 mcs	8.0 db gain	60.0° approx.
300	15.5 db	27.5°
500	20.0 db	16.5°
750	23.5 db	11.0°
1000	26.0 db	8.4°

... G. The antenna

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~~SECRET~~Page 3
SPM 544

✓G. The antenna (reflector and feed) must be detachable from the rotator. (Ten minutes is expected time limit.)

✓H. 100 knot winds and three inch ice conditions are climatic design limits with salt spray corrosion protection.

✓I. 1000 pounds maximum weight is understood to be realistic for the antenna and rotator.

✓J. Antenna continuously rotatable at the rate of 2 RPM with positioning accuracies within $\pm 1^\circ$ (plus or minus one degree.)

✓K. The positioning should be a manually activated system with power drive. The control assembly should contain the necessary switches for on-off operation, clockwise - counter clockwise rotation, and an azimuth indicator for instantaneous heading indication.

✓L. Beam gain patterns are requested which will serve as a systems test by using the GFE receiver [redacted] The patterns requested should be at the frequencies listed in para 2F above unless the side lobes become significant. If extensive side lobes exist, we request extensive testing in that region. Also, if possible, a gain curve for the center lobe is requested if the 150 to 1000 mcs band can be swept.

25X1

M. Pattern studies at the site are not required.

✓N. Power for the rotator will be 115 volts 60 cycles.

*115/230 30
250 DC*

✓O. The cube, weight, and exact delivery dates are requested as soon as possible so space for sea shipment can be established.

P. Our most urgent request to assist in expediting this antenna is to have detailed drawings for the rotator footings furnished as soon as possible. In this way preparations for the installation can be started and possibly finished prior to the arrival of the antenna at the operating site.

3. The cost of this work should be charged to allotment number 8-3400-83-909 and for further details please contact [redacted] OC-SP/EA, [redacted]

25X1

for
Acting

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